

Sub C/ 28. (New) The tire of claim 26, further comprising another conductive loop, for delivering power to the active element.

29. (New) The tire of claim 26 or 28, wherein the active element comprises a miniature sensor placed so as to be sensitive to a radial acceleration of the tire.

Bb 30. (New) The tire of claim 26, further comprising a nonvolatile onboard memory connected to the active element.

REMARKS

Claims 1 - 15 were examined in the Office action dated February 13, 2002. Claims 1 - 12 stand rejected under 35 U.S.C. § 112, first paragraph. Claims 1 - 9, 13 and 15 stand rejected under 35 U.S.C. § 112, second paragraph. Claim 10 stands rejected under 35 U.S.C. §102(b). Claims 1 - 15 stand rejected under 35 U.S.C. §103(a). By this amendment, claims 1 - 15 have been canceled, without prejudice, and claims 16 - 30 have been added. Accordingly claims 16 - 30 are now pending in this application.

Applicants respectfully submit that claims 1 - 15 were patentable over the cited references. Applicants have canceled claims 1 - 15 and added new claims 16 - 30 to provide a set of claims that succinctly describe certain aspects of Applicants' inventions. Hence, this Amendment is not a narrowing Amendment.

Amendment to the Specification

Applicants have amended the Specification to include headings and the Abstract per U.S. practice. No new matter has been added. Accordingly, enclosed is a new page 18 for the Abstract.

R s p o n s t o R j c t i o n o f C l a i m s 1 - 1 5 u n d e r 3 5 U . S . C . 1 1 2

Claims 1 - 15 stand rejected under 35 U.S.C. 112, first paragraph, as allegedly containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The Office action stated in paragraph 1:

The specification and claims (e.g. claim 6) define the manner of fixing the loops to the support as "a technique of the overcasting or tacking kind" - it however is not clear that the ordinary artisan would understand what these techniques are and therefore it is submitted that it does not appear that the ordinary artisan has been presented with sufficient information to practice the claimed invention without an undue burden of experimentation, it being stressed that the manner of fixing the loops to the support would seem to be a critical feature of the invention as it is apparently what allows the "loose" fixing.

Overcasting and tacking are well known knitting and stitching techniques. Thus, it would be apparent to one skilled in the art what is meant by the techniques of overcasting and tacking discussed in the specification. In particular, the specification describes examples (see, for example, the discussion related to Figure 4 at page 9, lines 8 - 22) of how the conductor is loosely fixed so that it initially be "zigzagged" and then "withstand the stretching of the preforms" up to, for example, 150%. Accordingly, Applicants request that the Examiner withdraw this rejection.

R e s p o n s e t o R e j e c t i o n o f C l a i m s 1 - 9 , 1 3 a n d 1 5 u n d e r 3 5 U . S . C . 1 1 2

Claims 1-9, 13 and 15 stand rejected under 35 U.S.C. 112, second paragraph, as allegedly being indefinite for failing to particularly

point out and distinctly claim the subject matter which applicant regards as the invention.

New claims 16 - 30 have been drafted to succinctly claim certain aspects of Applicants' inventions. All but three of the phrases that formed the basis of the rejection of claims 1-9, 13 and 15 are not present in claims 16 - 30. As a result, claims 16 - 30 are broader than claims 1-9, 13 and 15 in these respects. Hence, this Amendment is not a narrowing Amendment.

The Office action stated at page 3:

In claim 1, lines 7-10, it is not entirely clear what is meant by "fastening of the free ends of the preform" and how this fits into known tire building. While it is indeed well known and conventional to build a tire by winding an innerliner and carcass ply on a cylindrical tire building drum followed by toroidal shaping, the carcass and liner located between the beads certainly being stretched during this toroidal shaping, the free ends of the carcass ply are not typically fastened prior to this shaping (although it is noted that areas of the carcass/liner located adjacent to the free ends, i.e. at the beads, are often clamped to or pushed against the beads prior to the toroidal shaping step but in such case, the clamped areas/beads are typically brought axially inward with radially outward expansion of the carcass - they thus not "fastened" prior to shaping). Insofar as applicant is apparently not asserting any novelty for this particular step alone, clarification is therefore required of what this "fastening" step comprises and how it fits into the known tire building process.

Applicants agree that one way of manufacturing a tire involves winding an innerliner and carcass ply on a cylindrical tire building drum followed by toroidal shaping. This, however, is not the only

manner in which tires may be manufactured. The technique of "linking" "free ends of the deformable preform" also is a known method of manufacturing a tire. Thus, one skilled in the would know what is meant by this language. Accordingly, Applicants request that the Examiner withdraw this rejection.

The Office action stated at page 4:

In claim 1, line 16, it is not considered that the scope of protection afforded by defining that the conductor is fixed "in a loose manner" can be adequately and readily ascertained.

Applicants respectfully disagree. As discussed above in conjunction with the rejection of claims 1 - 15 under section 112, first paragraph, the specification provides sufficient teaching to enable one skilled in the art to make and perform this aspect of the claimed inventions. Specifically, one skilled in the art would be able to fix a conductor "in a loose manner" so as to enable the conductor to "withstand the stretching of the preforms." Accordingly, Applicants request that the Examiner withdraw this rejection.

The Office action stated at page 4:

As already noted, it is not clear what is a "technique of the overcasting or tacking kind" (claim 6) represents.

Applicants respectfully disagree. As discussed above in conjunction with the rejection of claims 1 - 15 under section 112, first paragraph, it would be apparent to one skilled in the art what is meant by the techniques of overcasting and tacking discussed in the specification. Accordingly, Applicants request that the Examiner withdraw this rejection.

Response to Rejection of 10 under 35 U.S.C. 102(b)

Claim 10 stands rejected under 35 U.S.C. 102(b) as allegedly being anticipated by DE 2524463 to Breuer. The Office action states at paragraph 7:

DE '463 discloses a tire having an implanted conductor under the tread that further would seem to be in "rectangular general shape" when flat and oriented in the claimed manner in light of figs. 2a and 2b.

Independent claim 25 claims a tire having "fixed under its tread, at least one conductive loop which has, when opened out flat, a rectangular general shape, a short side of the rectangular general shape extending substantially over a width of the tire and a long side of the rectangular general shape extending substantially along a periphery of the tire."

This structure is not taught or suggested by Breuer or any of the other cited references. Breuer teaches loops which are lateral in the tire, and do not extend across its width and periphery. In addition, as noted in the International Preliminary Examination Report at separate sheet 1: "in document DE 25 24 463 the loop forms a meander and is therefore not rectangular when it is opened out flat."

Moreover, Pollack et al. and Schuermann do not disclose windings in the lateral portion of the tire, that are "fixed under its tread." Thus, claim 25 is not anticipated by or obvious in view of the cited references considered either separately or in combination. Accordingly, independent claim 25 and its dependent claims (claims 26 - 30) are patentable over the cited references.

Response to Rejection of Claims 1 - 3 under 35 U.S.C. 103(a)

Claims 1-3 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Pollack et al. (US 5,181,975). The Office action states, in part, in paragraph 6:

Pollack et al. discloses building a tire with a preformed conductor fixed therein, this conductor having what can be termed a "rectangular general shape" (e.g. note fig. 4). Further, this reference clearly indicates that the conductor is incorporated in the tire on the drum prior to

toroidal shaping - note esp. col. 10, lines 6-18. As already noted, it is not clear what is included by requiring that the conductor be "fixed in a loose manner" - it is however submitted that since some relative conductor movement is contemplated (note esp. col. 10, lines 14-15), it is not unreasonable to consider this to meet the present claims. . . . Although the conductor in this reference is located adjacent the beads and thus is not located under the tread, nothing in the present claims defines over a location in the beads.

Independent claim 16 claims a method including "preparing a complementary preform comprising an elastic support, of a second rectangular general shape, homologous said first rectangular general shape, said complementary perform having at least one conductor fixed thereon in a loose manner, along a path having a third rectangular general shape, and adding the complementary preform to the deformable preform on said support in said assembly, such that said third rectangular general shape extends substantially across a length and a width of said first rectangular general shape."

Pollack et al. does not teach or suggest the claimed method. Pollack et al. discloses windings in the lateral portion of the tire, not "substantially across a length and a width of said first rectangular general shape." Significantly, Applicants claimed invention provides a method that may be used to install a loop close to the periphery of a tire, during its manufacture. There are very significant advantages in placing loops across the periphery of the tire. These advantages are discussed in the specification, for example, beginning at page 10, line 15.

The periphery of the tire, however, is a very sensitive portion, during manufacture. Manufacturers do not accept modifications in that manufacture, unless they can be reasonably sure that it does not change the mechanical properties of the tire, which of course have the

utmost priority. The claimed invention provides a solution to this problem through the use of the "complementary preform." In this way, tire manufacturers may embody one or more loops or coils in the periphery of a tire without substantially modifying their manufacturing process. Pollack et al., in contrast, does not teach or suggest the use of a "complementary preform comprising an elastic support, . . . said complementary preform having at least one conductor fixed thereon in a loose manner."

Thus, claim 16 is not obvious in view of Pollack et al. Accordingly, independent claim 16 and its dependent claims (claims 17 - 24) are patentable over Pollack et al.

Response to Rejection of Claims 1 - 4 under 35 U.S.C. 103(a)

Claims 1-4 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Schuermann (US 5,479,171). The Office action states in paragraph 8:

Schuermann discloses building a tire with an antenna formed from a conductor shaped in rectangular form (fig. 1). Further, the reference indicates that the antenna can be incorporated within the structure of the tire (e.g. sidewall) in an "integrated manufacturing process" (col. 3, lines 48-52). Although this reference does not provide any more specifics of the manufacturing process, it is well known, conventional and common in this art to build up the various tire plies on a cylindrical drum followed by expansion to toroidal form as claimed. To incorporate the rectangular conductor during this initial building on the cylindrical form would therefore have been an obvious manner to build the desired tire. Further, to aid in building efficiency as well as to help maintain the desired shape of the antenna, to preincorporate the rectangular conductor forming the antenna within an elastomeric

substrate would have been obvious, it further being noted that it is extremely common and well known in this art to preincorporate almost every reinforcement material with elastomer prior to the building steps for similar reasons. Further, as is well known, the embedded reinforcement materials in tires commonly do reorient within the tire (e.g. "pantograph") during tire building/shaping (prior to curing) and thus it would seem reasonable to term such as "loose" fixing - following such conventional embedding techniques would thus likewise be expected to result in "loose" fixing of the conductor.

As to claim 2, insofar as locations both on and adjacent to the tire interior are clearly contemplated (e.g., figs. 4a, 4b), any location in this area, including between the carcass and liner plies, would have been obvious.

Independent claim 16 claims a method including "preparing a complementary preform comprising an elastic support, of a second rectangular general shape, homologous said first rectangular general shape, said complementary perform having at least one conductor fixed thereon in a loose manner, along a path having a third rectangular general shape, and adding the complementary preform to the deformable preform on said support in said assembly, such that said third rectangular general shape extends substantially across a length and a width of said first rectangular general shape."

Schuermann does not teach or suggest the claimed method. Schuermann discloses windings in the lateral portion of the tire, i.e., close to the rim. Thus, Schuermann does not teach or suggest that a "third rectangular general shape extends substantially across a length and a width of said first rectangular general shape."

Applicants' claimed invention would not have been not obvious to one skilled in the art at the time of the invention. The difficulties

encountered in modifying the tire manufacture in the periphery of the tire are clearly an obstacle against that alleged obviousness. As discussed above in conjunction with the rejection of claim 1 - 3, Applicants' claimed invention is directed to techniques that enable, for the first time, manufacturing processes that may be acceptable for the tire manufacturers, to embody one or more loops or coils in the periphery of a tire. To this end the claims disclose specific techniques and structures that are not disclosed or suggested by any of the cited reference considered either separately or in combination.

Thus, claim 16 is not obvious in view of the cited references. Accordingly, independent claim 16 and its dependent claims (claims 17 - 24) are patentable over these references.

Response to Rejection of Claims 5 - 15 under 35 U.S.C. 103(a)

Claims 5-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schuermann (US 5,479,171) taken in view of WO 90/12474 to Maimer et al. The Office action states in paragraph 9:

As to claim 10 directed to the tire, Schuermann only seems to depict the antenna located in the sidewall of the tire. WO '474 is directed to similar sensor systems and in particular indicates that the conductor or antenna can suitably be provide in a number of locations in the tire, including in the tread area (note esp. fig. 4). to provide the rectangular antenna of Schuermann in the tread area would therefore have been obvious in light of this teaching.

As discussed above, it would not have been obvious to one skilled in the art to provide a rectangular antenna in the tread area due to manufacturing concerns regarding this sensitive area of the tire. Moreover, none of the cited references, including Maimer et al., teach or suggest the specific techniques and structure claimed in

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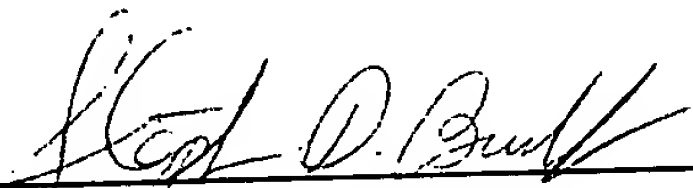
independent claims 16 and 25 as set forth above. Thus, claims 16 - 30 are patentable over all of the cited references.

SUMMARY

Applicants submit that pending claims 16 - 30 are in condition for allowance. Accordingly, Applicants respectfully request that the application be passed to issue. Attached hereto is a marked-up version of the changes made to the above-identified application by the current amendment. The attached page is captioned "Version with markings to show changes made."

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

At page 1, before line 5 insert the following heading:
BACKGROUND OF THE INVENTION

At page 2, before line 8 insert the following heading:
SUMMARY OF THE INVENTION

At page 4, before line 2 insert the following heading:
BRIEF DESCRIPTION OF THE DRAWINGS

At page 5, before line 8 insert the following heading:
DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

On new page 18 add an Abstract as follows:

ABSTRACT

The invention concerns a tyre equipped with a conductive loop, and a method for implanting such a loop. The loop is implanted between the radial body ply and a sealing layer of the tyre. It has, when unfolded flat, a substantially rectangular shape, the smaller side and the larger side of the rectangle extending substantially over the width of the tyre along the periphery thereof, respectively.

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ABSTRACT OF THE DISCLOSURE

5 The invention concerns a tyre equipped with a conductive
loop, and a method for implanting such a loop. The loop is
implanted between the radial body ply and a sealing layer of the
tyre. It has, when unfolded flat, a substantially rectangular
shape, the smaller side and the larger side of the rectangle
extending substantially over the width of the tyre along the
10 periphery thereof, respectively.

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